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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,186	09/08/2003	Woo-Shik Kim	030681-570	8408

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EXAMINER

WONG, ALLEN C

ART UNIT	PAPER NUMBER
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2621

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/656,186

Applicant(s)

KIM ET AL.

Examiner

Allen Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/31/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 51-52 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 51-52 define a "computer readable recording medium..." embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the

medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). That is, the scope of the presently claimed “computer readable recording medium...” can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on “computer-readable medium” or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

For instance, the claims should be rewritten as “a computer readable medium encoded with a computer program comprising computer executable instructions for ...”

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21-25, 46-50 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Ngai (6,263,023).

Regarding claims 21, 46 and 52, Ngai discloses a method and an apparatus for redundant image decoding, the apparatus comprising:

a picture header decoding unit which decodes picture header information containing the structures, positions, and sizes of slices in a bitstream where image data are encoded (col.5, ln.27-43; Ngai discloses the use of a slice address allocator where encoded slice data parameter information is kept and coordinated, used for decoding

image information, where slice addresses, high level symbol data such as size, position, structures of picture information are utilized and tracked; thus, picture headers decoding unit is utilized);

a slice construction unit which determines the structures and positions of a plurality of slices to be decoded according to the picture header information (fig.1, elements 18 and 20 are interactively connected and used together for determining structures and positions of plural slices);

a slice decoding unit which decodes an image in units of slices according to the picture header information (fig.1, element 16); and

an image construction unit which disposes a decoded slice image according to the structure and position of the slice determined by the slice construction unit and restores and outputs the image (col.4, ln.48-51; fig.1, element 38 is the output for display of images as constructed by image construction unit 20);

wherein predetermined regions of at least two slices of the plurality of slices constructed by the slice construction unit are overlapped on each other (fig.1, element 20 utilizes the synchronization of image data that leads to the overlapped slices that include the predetermined regions of at least two slices of the plurality of slices constructed by the slice construction unit).

Regarding claims 22-25 and 47-50, Ngai discloses wherein the slice decoding unit comprises:

an entropy-decoding portion which entropy-decodes an inputted bitstream in units of slices according to the position and size information of the slices (fig.2, element

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44); an inverse-transform quantization portion which performs inverse-quantization of entropy-decoded image data, performs inverse-transform of the inversely-quantized image data into a temporal region, and generates temporal/spatial predictively-encoded image data (fig.2, element 46); and an image restoration portion which restores an image by compensating the temporal/spatial predictively-encoded image data (fig.2, element 52).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-20, 26-45 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borgwardt (5,949,490) in view of Ngai (6,263,023).

Regarding claims 1, 26 and 51, Borgwardt discloses a method and an apparatus for redundantly encoding a predetermined region of an image, the apparatus comprising:

a slice modeling unit which determines the structures of slices to be used in encoding the image and regions to be redundantly encoded so that image data of a predetermined region of the image to be redundantly encoded is contained in a plurality of slices (col.4, ln.12-23, Borgwardt discloses that the slices are modeled and sent to client processors to determine the structure of slices to be used in encoding);

a slice allocation unit which allocates image data of each region of an image to the plurality of slices (fig.6, note that Borgwardt discloses the plural slice of each region of the frame is allocated based on the complexity and to determine the proper encoding rate); and

a slice encoding unit which encodes the image in units of slices according to the picture header information (col.4, ln.19-29).

Borgwardt does not specifically disclose a picture header encoding unit which encodes information required to decode the plurality of encoded slices and generates picture information. However, Ngai teaches the use of a high definition television decoder that decodes the plurality of slices and generating picture information (col.5, ln.27-43; Ngai discloses the use of a slice address allocator where encoded slice data parameter information is kept and coordinated, used for decoding image information, and see fig.1, note multiple slice decoders 16, thus, picture headers encoding unit is utilized). The use of a picture header encoding unit is well known in the art of MPEG encoding since a picture is defined as a plurality of slices, where headers are typically used to define picture information data for informing the decoder or the reception terminal as to how to properly decode image data for viewing. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Borgwardt and Ngai, as a whole, for producing an accurate, efficient, robust image decoder for producing high quality video images for viewing (Ngai col.3, ln.13-22).

Note claims 2-14 and 27-39 have similar corresponding elements.

Regarding claims 15 and 40, Borgwardt discloses wherein the slice encoding unit comprises: a temporal/spatial predictive encoding portion which performs temporal/spatial predictive encoding in units of slices of the image (fig.1, note use of MPEG encoder and the recursive rate control scheme for encoding interframe images like P and B frames, and note that intraframes (I frames) are encoded); a transform quantization portion which transforms the temporal/spatial predictively-encoded data into a frequency region and quantizes the data (fig.1, note "DCT" and "Q" or quantization); and an entropy-encoding portion which entropy-encodes the quantized data (fig.1, note "VLE").

Borgwardt does not specifically disclose a slice header encoding portion which generates a slice header containing information used to encode a macroblock in the slice. However, Ngai teaches the use of a high definition television decoder that decodes the plurality of slices and generating picture information (col.5, ln.27-43; Ngai discloses the use of a slice address allocator where encoded slice data parameter information is kept and coordinated, used for decoding image information, and see fig.1, note multiple slice decoders 16, thus, picture headers encoding unit is utilized). The use of a picture header encoding unit is well known in the art of MPEG encoding since a picture is defined as a plurality of slices, where headers are typically used to define picture information data for informing the decoder or the reception terminal as to how to properly decode image data for viewing. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Borgwardt and Ngai, as a

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whole, for producing an accurate, efficient, robust image decoder for producing high quality video images for viewing (Ngai col.3, ln.13-22).

Note claims 16-20 and 41-45 have similar corresponding elements.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen Wong whose telephone number is (571) 272-7341. The examiner can normally be reached on Mondays to Thursdays from 8am-6pm Flextime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Groody can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read 'Allen Wong', with a long, sweeping horizontal stroke extending to the right.

Allen Wong
Primary Examiner
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AW

1/22/07